PHILOSOPHICAL TRANSACTIONS.

Auguſt 16. 1669.

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An Invention

For Eſtimating the Weight of Water in Water *with ordinary Ballances and Weights.*

THe Author of this Invention is the Noble *Robert Boyle*; who was pleas'd to comply with our deſires of communicating it in Engliſh to the Curious in *England*, as by inſerting the ſame in the *Latin* Tranſlation of his *Hydroſtatical Paradoxes*

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he hath gratified the Ingenious *abroad*. And it will doubtleſs be the more welcome, for as much as no body, we know of, hath ſo much as attempted to determine, *How much* Water may weigh in Water; and poſſibly if ſuch a *Problem* had been propos'd, it would have been Iudged impracticable.

The Method or Expedient, he made uſe of to perform it as near as he could, may be eaſily learned by the enſuing accompt of a Tryall or two, he made for that purpoſe, which among his Notes he cauſed to be regiſtred in the following words.

A Glaſs-buble of about the bigneſs of a pullets-egg was purpoſely blown at the flame of a Lamp, with a ſomewhat long ſtem turn'd up at the end, that it might the more conveniently be broken off. This Buble being well heated to rarify the Air, and thereby drive out a good part of it, was nimbly ſealed at the end, and by the help of the figure of the ſtem was by a convenient Weight of Lead depreſſed under water, the Lead and Glaſs being tyed by a ſtring to one Scale of a good Ballance, in whoſe other there was put ſo much weight, as ſufficed to counterpoiſe the Buble, as it hung freely in the midſt of the water. Then with a long Iron *forceps* I carefully broke off the ſeal'd end of the Buble under water, ſo as no Buble of Air appear'd to emerge or eſcape through the water, but the liquor by the weight of the Atmoſphere ſprung into the un-repleniſht part of the Glaſs-buble, and fill'd the whole cavity about half full; and preſently, as I foretold, the Buble ſubſided and made the Scale, 'twas faſtned to, preponderate ſo much, that there needed 4. *drachms* and 38. *graines* to reduce the Ballance to an *Æquilibrium*. Then taking out the Buble with the water in't, we did, by the help of the flame of a candle, warily apply'd, drive out the water (which otherwiſe is not eaſily excluded at a very narrow ſtem) into a Glaſs counterpoiſed before; and we found it, as we expected, to weigh about 4 dramchs and 30 graines, beſides ſome little that remained in the Egg, and ſome ſmall matter that may have been rarified into vapors, which added to the piece of Glaſs that was broken off under water and loſt there, might very well amount to 7. or 8. graines. By which it appears not only, that water hath ſome weight in water, but that it weighs very near * or altogether as much in Water, as the ſelf ſame portion of liquor would weigh in the Air.

* *This expreſſion was added, to leave Liberty for a further inquiry, Whether the Experiment, which hereby appears convincing as to the main thing intended to be proved may not admit the having ſomething further debated, and annext about ſome circumſtantial thing or other.*

The ſame day we repeated the Experiment with another ſealed Bubble, larger then the former (being as bigg as a great Hen-egg,) and having broken this under water, it grew heavier by 7. *drachms* and 34. *graines*; and having taken out the Buble, and driven out the water into a counterpois'd Glaſs, we found the tranſvaſated liquor to amount to the ſame weight, abating *6* or 7 *graines*, which it might well have loſt upon ſuch acccompts, as have been newly mentioned.

An Extract of a Letter

Written by Mr. Joſhua Childrey *to the Publiſher, containing an Accompt of a paſſage by ſea to the* Eaſt-Indies, *communicated to him by that Ingenious Travailor Mr.* Richard Smithſon *Who made two voyages into thoſe parts.*

FRom *England* to *Cape Finis Terra* in *Gallicia* in 44. degr. *North Lat.* the Winds are as variable as with Vs; onely the Bay of *Biſcay* is more ſubject to ſtorms, and the Sea more rough, and the Waves running very high.

From thence to 34. degr. The Wind is variable alſo, but if you be within 100 leagues of the *European* Continent, it is generally inclined to *North-Eaſt*

From 34 degrees, if you be inclining to the coaſt of *Africa*, or about the Meridian of the *Canaries*, the Wind is ſo certain, and conſtantly at *North-Eaſt* (or within two points) that it is rare to find it otherwiſe. Yet in Winter, upon the coaſt of *Africa* there are ſometimes Weſterly ſtorms, that are violent, but of no long continuance. And in Summer, when it is ſometimes calme, the Air will come variably. Theſe *North-Eaſt*-Winds hold moſt commonly to 8. degrees *North-Latitude*, and then begin the *Tornado* Winds, which are moſt part confined between 8. and 4. degrees *North-Latitude*. They are ſel-